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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/800,505	03/15/2004	Paul A. Bristow	3699	9495
22474	7590	11/09/2004		
DOUGHERTY, CLEMENTS & HOFER 1901 ROXBOROUGH ROAD SUITE300 CHARLOTTE, NC 28211			EXAMINER DANIELS, MATTHEW J	
			ART UNIT 1732	PAPER NUMBER

DATE MAILED: 11/09/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/800,505

Applicant(s)

BRISTOW ET AL.

Examiner

Matthew J. Daniels

Art Unit

1732

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

1. The examiner has considered co-pending applications 10/820,205, 10/810,739, 10/805,760, and 10/175,620 for possible double patenting.

***Election/Restrictions***

2. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-34, drawn to a thermoform process, classified in class 264, subclass 45.1+ .
  - II. Claims 35-48, drawn to a vehicle headliner, classified in class 442, subclass 35.

The inventions are distinct, each from the other because of the following reasons:

3. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product can be made by another process, i.e. by forming two traditionally compression molded sheets and then uniting these sheets to a single two step vacuum molding process, which produces the sheets and then in the same mold combining the sheets into a unified part.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

5. During a telephone conversation between Examiner Ruddock and Mr. Brockington on September 21, 2004, a provisional election was made without traverse to prosecute the invention of Group I, claims 1-34. Affirmation of this election must be made by applicant in replying to this Office action. Claims 35-48 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

6. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

#### ***Priority***

7. Applicant's claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 14, 17, 23, 24, 25, 26, 27, 28, 29, 30, 31, and 32 of this application. Specifically, the Examiner finds insufficient evidence in the priority document to support claims 14 and 17, which claim a cover stock material further comprised of an underlying layer of foam. The Examiner also finds insufficient evidence in the priority document to support claims 23, 25, and 27, which are directed to injecting foam into the interior compartment. The Examiner also finds insufficient evidence in the priority document to support claims 24, 26, and 28, which are directed to injecting insulation into the interior compartment. The Examiner also finds insufficient evidence in the priority document to support claim 29, which is directed to

positioning components or materials into what will become the interior compartment. The Examiner also finds insufficient evidence to support claims 30, 31, and 32, which claim secondary punching, laser, water-jet cutting, and ultrasonic and hot plate welding.

**Claim Rejections - 35 USC § 112**

8. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, applicant claims (Page 17) heating, transferring and molding the first and second sheets onto opposing half molds. The formed part from both opposing half molds is referred to as a “first headliner part.” If the applicant intends to claim that a second headliner part is formed on the opposing half mold, revision of the claim is suggested.

9. Claims 2 and 3 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, applicant claims (Page 18) “the first sheet is a low pressure...thermoplastic composite” in Claim 2 and “the second sheet is a low pressure...thermoplastic composite” in Claim 3. The Examiner takes the position that reciting pressure as a characteristic of a form of matter renders the claim indefinite. Applicant’s specification does not clarify the meaning of “low pressure” as it relates to the characteristics of thermoplastic composites. Revision of the claims is required.

Art Unit: 1732

10. Claims 9, 21, and 22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding Claims 9, 21, and 22, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

11. Claim 28 is rejected because it lacks antecedent basis. Claim 28 recites the limitation "reinforced scrim" and is dependent on Claim 1. There is insufficient antecedent basis for this limitation in the claim because the thermoform process according to Claim 1 does not include a reinforced scrim second headliner part.

12. Claims 30, 31, and 32 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding Claims 30, 31 and 32, the phrase "as needed" renders the claims indefinite because the claim does not set forth under what conditions the steps are needed, and therefore it is unclear if the steps are performed. Therefore, it is unclear whether the limitations following the phrase "as needed" are part of the claimed invention.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. **Claims 1, 20, 23, 24, 30, 33 and 34** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Breezer (USPN 5,635,129), Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), and Official Notice. **As to Claim 1**, Holtrop teaches a thermoforming process for forming headliners (5:24) which comprises the steps of heating first and second layers (4:59-61), transferring the sheets to a vacuum thermoforming mold (4:62-63 and 5:3-5), and molding the sheets onto halves of the mold (5:3-5). Holtrop is silent to: a) an oven for heating the first and second sheets to predetermined temperatures, b) frames holding the first and second sheets, c) thermoforming the first and second sheets onto half molds prior to fusing regions of the headliner parts, d) the interior compartment having impact cushioning, e) ejecting the unified part, and f) trimming the unified part and g) finishing the unified part.

a) Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4).

b) Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities.

c) Breezer teaches a thermoform process to form thermoformed articles with portions of significantly greater thickness than the combined thicknesses of the sheets from which the article is formed (2:35-39) comprising the steps of: holding a first sheet along its edges (Fig. 6, Item 34); heating the first sheet (3:39-41); transferring and molding the first sheet onto a half mold of

Art Unit: 1732

a vacuum thermoforming mold forming a first part (3:38-47); holding a second sheet along its edges (Fig. 6, Item 30); heating the second sheet (3:49); transferring and molding the second sheet onto an opposing half mold of the vacuum thermoforming mold forming a second part (3:48-50); compressing the half molds of the thermoforming mold fusing regions of the first part to the second part (3:50-54), thereby forming a unified part having at least one interior compartment (Fig. 6).

d) The Examiner takes Official Notice that interior cavities are well known to provide impact cushioning. One common example available at the time of the invention would have been tennis shoes with interior air compartments for impact cushioning. The Examiner also takes the position that the thermoformed laminate taught by Holtrop would have inherently have had impact cushioning because it contains interior cavities (Fig. 2) as sought by Applicant.

e) Haardt teaches ejecting a composite laminate part (4:55-56).

f) Corpe teaches (6:44-49) trimming.

g) The applicant admits on Page 11 of the specification that finishing steps include modification of the interior compartment. Breezer teaches (Fig. 7) filling the compartment. Holtrop also teaches filling the compartment (5:15-21). Applicant does not teach a specific order for the steps comprising the thermoforming process and therefore finishing, as exemplified by Applicant, is prima facie obvious in view of Breezer and Holtrop.

The references of Holtrop, Byrna, Steward, Breezer, Haardt and Corpe are properly combinable because all are directed at thermoforming laminate sheets, and are therefore within the same field of endeavor. One would have been motivated to combine the methods taught by Byrna, Steward,



Art Unit: 1732

Breezer, Haardt and Corpe with the twin-sheet thermoforming process taught by Holtrop in order to produce a headliner with improved acoustic properties as taught by Holtrop, optimal bonding of the laminate layers as taught by Byma, without shrinkage and surface irregularities as taught by Steward, with increased thickness as taught by Breezer, and to eject the part as taught by Haardt to reduce the danger to the laborer by ejecting the part rather than removing it manually. Therefore, it would have been prima facie obvious to one of ordinary skill at the time of the invention use the thermoform process taught by Holtrop, Byma, Steward, Breezer, Haardt and Official Notice as sought by Applicant in Claim 1. **As to Claim 20**, Holtrop teaches a headliner part (5:24). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention using the process of Holtrop, Byma, Steward, Breezer, Haardt and Official Notice to use the product as a headliner. **As to Claim 23**, Holtrop teaches injecting foam into the interior compartment (5:15-21). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention. **As to Claim 24**, Holtrop teaches injecting foam, but is silent to injecting "insulation" or to the foam acting as insulation. The Examiner takes the position that it would have been obvious to one of ordinary skill in the art that the foam taught by Holtrop (5:15-21) would have acted as thermal and sound insulation. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to inject insulation into the interior compartment because doing so would reduce noise within the passenger compartment. **As to Claim 30**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove

Art Unit: 1732

it from the framed sheets, and make it fit into the vehicle. **As to Claim 33**, Holtrop teaches preheating the first sheet (4: 59-63). Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4). Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the oven of Byma for obtaining optimal compression and bonding of the layers and the tenter frames taught by Steward to avoid surface irregularities and shrinkage with the method of Holtrop, Byma, Steward, Breezer, Haardt, and Corpe to achieve the same benefits. **As to Claim 34**, Holtrop teaches preheating the second sheet (4: 59-63). Byma teaches an oven (3:66) for heating a first and second sheet to predetermined temperatures (Fig. 4) for thermoforming headliner parts to obtain optimal compression and bonding of the layers (2:1-4). Steward teaches (6:40-49) use of tenter frames during a preheating step prior to thermoforming a headliner to avoid shrinkage and surface irregularities. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the oven of Byma for obtaining optimal compression and bonding of the layers and the tenter frames taught by Steward to avoid surface irregularities and shrinkage with the method of Holtrop, Byma, Steward, Breezer, Haardt, and Corpe to achieve the same benefits.

14. **Claims 2 and 3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), and Official Notice.

Art Unit: 1732

Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claim 1. The Examiner cites Page 3 of Applicant's specification to show that the "first headliner part...is substantially the shape that is visible as seen from inside the vehicle" to distinguish the first sheet of Claim 2 (visible inside vehicle) from the second sheet of Claim 3.

**As to Claim 2**, Holtrop is silent to the first sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers. Haardt teaches a first sheet (2:23) that is a low pressure (3:47), thermoformable, thermoplastic composite comprised of polypropylene and reinforcing agents (2:38). Haardt teaches both first and second sheets comprised of polypropylene and reinforcing agents (2:35-39), and long glass fibers (2:59 to 3:6) used as reinforcing agent in the second sheet (3:3), and therefore it would have been obvious to one of ordinary skill that long glass fibers also be used as the reinforcement in the first sheet. Although Haardt is silent to the long glass fibers specifically being "chopped," the Examiner takes the position that the long glass fibers are not indefinite in length, and were therefore cut to some length. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a first sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers given Haardt's teaching that such a sheet has an increased rigidity in the method of Holtrop, Byma, Steward, Breezer, Haardt, Official Notice, and Applicant's admission. **As to Claim 3**, Holtrop is silent to the second sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers. Haardt teaches a second sheet that is thermoformable, thermoplastic composite comprised of polypropylene and long glass fibers (2:59 to 3:6). Although Haardt is silent to the second sheet that is "...low pressure,

Art Unit: 1732

thermoformable,” Haardt’s teaching that both sheets are comprised of polyethylene and that the first sheet is formed at reduced pressure would make it obvious to one of ordinary skill that the second sheet is also capable of being formed at reduced pressure and is therefore, “low pressure, thermoformable.” Although Haardt is silent to the long glass fibers specifically being “chopped,” the Examiner takes the position that the long glass fibers are not indefinite in length, and were therefore cut to some length. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a second sheet that is a low pressure, thermoformable, thermoplastic composite comprised of polypropylene and long chopped glass fibers, given Haardt’s teaching that such a sheet has an increased rigidity, in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe and Official Notice.

15. **Claims 4,5,6 and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), and Official Notice. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claim 1. **As to Claim 4**, Holtrop teaches a first headliner part that is further comprised of a layer of fusing adhesive (3:59-61 and 4:16-20 and 4:33-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice because doing so would help prevent the problems of layer delamination and sagging headliners. **As to Claim 5**, Holtrop teaches a second headliner part that is further comprised of a layer of fusing adhesive (3:59-61 and 4:16-20 and 4:33-35). It would have been prima facie obvious to

Art Unit: 1732

one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice because doing so would help prevent the problems of layer delamination and sagging headliners. **As to Claim 6**, Holtrop teaches the first sheet vacuum molded on the half mold (5:3-5) wherein the layer of fusing adhesive is on a side of the first sheet that is not in contact with the half mold (4:34-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive on a side of the first sheet that is not in contact with the half mold in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice because doing so would aid in bonding the two sheets together and help prevent the problems of layer delamination and sagging headliners, and also avoid sticking of the sheet to the mold. **As to Claim 7**, Holtrop teaches the second sheet vacuum molded on the half mold (5:3-5) wherein the layer of fusing adhesive is on a side of the second sheet that is not in contact with the half mold (4:34-35). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to use a layer of fusing adhesive on a side of the second sheet that is not in contact with the half mold in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice because doing so would aid in bonding the two sheets together and help prevent the problems of layer delamination and sagging headliners, and also to prevent sticking of the sheet to the mold.

16. **Claims 8, 25, 26, and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Official Notice, and further in

Art Unit: 1732

view of Juriga (USPN 5,549,776). Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claim 1. Holtrop teaches a composite of fabric, adhesive, and foamed thermoplastic sheet laminated by the application of heat and pressure (4:16-24). Holtrop is silent to a thermoform process further comprising the steps of: after heating the first sheet in the oven to the predetermined temperature, transferring the heated first sheet to a thermoforming mold having matched mold halves; transferring a cover-stock material to the thermoforming mold having matched mold halves; compressing and fusing the cover-stock material to the first sheet forming a covered first headliner part; and transferring the covered first headliner part to a second mold and positioning the covered first headliner part in the lower half mold of the vacuum thermoforming mold. Juriga teaches a thermoform process further comprising the steps of: after heating the first sheet in the oven to the predetermined temperature (3:19-20 and 6:25-27), transferring the heated first sheet to a thermoforming mold having matched mold halves (3:22 and Fig. 4, Items 142 and 144); transferring a cover-stock material to the thermoforming mold having matched mold halves (4:21-23); compressing and fusing the cover-stock material to the first sheet forming a covered first headliner part (6:29-33). Holtrop teaches transferring the covered first headliner part to a second mold (4:62-63) and positioning the covered first headliner part in the lower half mold of the vacuum thermoforming mold (5:3-5). It would have been prima facie obvious to one of ordinary skill in the art at the time of invention to combine the method of Juriga with method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice to provide a thermoform process further comprising the steps of: after heating the first sheet in the oven to the predetermined temperature, transferring the heated first sheet to a thermoforming mold having matched mold halves; transferring a cover-

Art Unit: 1732

stock material to the thermoforming mold having matched mold halves; compressing and fusing the cover-stock material to the first sheet forming a covered first headliner part; and transferring the covered first headliner part to a second mold and positioning the covered first headliner part in the lower half mold of the vacuum thermoforming mold because doing so would produce a self supporting headliner with structural integrity as taught by Juriga (2:42-45) as well improved acoustic properties as taught by Holtrop(5:24-28). **As to Claim 25**, Holtrop teaches injecting foam into the interior compartment (5:15-21). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention because doing so would help reduce the severity of head injury to passengers. **As to Claim 26**, although Holtrop does not specifically teach injecting insulation, Holtrop does teach injecting foam (5:15-21). The Examiner takes the position that it would have been obvious to one of ordinary skill in the art that the foam taught by Holtrop would have acted as thermal and sound insulation. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to inject insulation into the interior compartment because doing so would help reduce noise in the passenger compartment. **As to Claim 31**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle.

17. **Claims 9 and 11** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer

Art Unit: 1732

(USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), and Official Notice. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claim 1. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, Juriga, and Official Notice teach the subject matter of Claim 8. **As to Claim 9**, Holtrop teaches a cloth (3:62) and a fabric (4:17) cover stock material, which the Examiner interprets to be the same as a felt. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to have used a fabric or cloth as taught by Holtrop in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, Juriga, and Official Notice because doing so would have provided an improved aesthetic appeal and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 11**, Holtrop further teaches an interlayer adhesive (3:59-63 and 4:16-24) to promote the adhesion of the fabric and foamed thermoplastic sheet. Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to have used an interlayer adhesive to promote adhesion of the fabric and foamed thermoplastic sheet in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, Juriga, and Official Notice because doing so would have helped prevent the problems of layer delamination and sagging headliners.

18. **Claims 10 and 12** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), and Official Notice,. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claims 1 and 7. **As to Claim 10**, Holtrop teaches a cover stock with an



Art Unit: 1732

underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, and Official Notice because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 12**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe and Official Notice because doing so would have helped reduce the problems of layer delamination and sagging headliners. **As to Claim 21**, Holtrop teaches a finished headliner (5:22-28) covered with a fabric (4:16 and 4:59-69) and would have therefore been prima facie obvious to one of ordinary skill in the art at the time of the invention because using the finished headliner covered with fabric of Holtrop would have aesthetic appeal.

19. **Claims 13, 27, and 32** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Official Notice, and further in view of Juriga (USPN 5,549,776). Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claims 1 and 7. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, Juriga, and Official Notice teach the subject matter of Claim 8. **As to Claim 13**, Holtrop is silent to a layer of reinforcing scrim. Juriga

Art Unit: 1732

teaches (2:55-60) an improved fiber reinforcing scrim which structurally reinforces the laminate and reduces sag at elevated temperatures located in the second sheet (5:6-7). Juriga teaches that the scrim layer is molded to the second sheet (6:29-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to mold a layer of scrim material to the second sheet forming a scrim reinforced headliner part because doing so would structurally reinforce the laminate and reduce sag at elevated temperatures. **As to Claim 27**, Holtrop teaches injecting foam into the interior compartment (5:15-21). Therefore, it would have been prima facie obvious to one of ordinary skill in the art at the time of the invention. **As to Claim 32**, Holtrop is silent to the specific finishing treatments sought by Applicant. Corpe teaches (6:44-49) water jet cutting. It would have been obvious to one of ordinary skill in the art at the time of the invention to include a step of water jet cutting to improve the overall appearance of the headliner, to remove it from the framed sheets, and make it fit into the vehicle.

20. **Claims 14, 15, and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), and Official Notice. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claims 1 and 7. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, Juriga, and Official Notice teach the subject matter of Claims 8 and 13. **As to Claim 14**, Holtrop teaches an underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the

Art Unit: 1732

process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, Juriga, and Official Notice because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 15**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, and Official Notice because doing so would have helped prevent the problems of layer delamination and sagging headliners. **As to Claim 16**, Holtrop teaches fusing the layer of fusing adhesive on the covered first headliner part to the layer of fusing adhesive on second headliner part, thereby forming a covered unified part. Holtrop does not specifically teach compressing the half molds of the thermoforming mold to adhere the layers of fusing adhesive. However, the examiner takes the position that in the fusing of the two layers as taught by Holtrop, compressing the half molds of the thermoforming mold to adhere the layers of fusing adhesive was a necessary step and would have been prima facie obvious to one of ordinary skill in the art at the time of the invention.

21. **Claims 17, 18, 19, and 22** are rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), and Official Notice. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claims 1 and 7. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe Juriga, and Official Notice teach the subject matter of

Art Unit: 1732

Claims 8 and 13. **As to Claim 17**, Holtrop teaches an underlying layer of foam (4:17-18). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, and Juriga because doing so would have provided a soft texture and also improved acoustic properties, as taught by Holtrop (5:24-28). **As to Claim 18**, Holtrop teaches (4:33-50) adhesives on the inner surfaces of headliner parts and fusing by thermoforming to produce a covered unified part (4:64-66). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cover stock material further comprising an underlying layer of foam in the process of Breezer, Byma, Holtrop, Steward, Haardt, Corpe, and Official notice because doing so would have helped prevent the problems of layer delamination and sagging headliners. **As to Claim 19**, Holtrop is silent to a layer of reinforcing scrim. Juriga teaches (2:55-60) an improved fiber reinforcing scrim which structurally reinforces the laminate and reduces sag at elevated temperatures located in the second sheet (5:6-7). Juriga teaches that the scrim layer is molded to the second sheet (6:29-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to mold a layer of scrim material to the second sheet forming a scrim reinforced headliner part because doing so would structurally reinforce the laminate and reduce sag at elevated temperatures. **As to Claim 22**, the Examiner interprets the reinforced scrim part of this claim to be the united first and second sheets, not the reinforced scrim second headliner part as claimed in Claim 19. Holtrop teaches that both surfaces of the headliner (4:53-54) are covered with a fabric. It would have been prima facie obvious to one of ordinary skill in the art

Art Unit: 1732

at the time of the invention that both surfaces of the headliner be covered with fabric to improve aesthetic appeal and acoustic dampening.

22. **Claim 28** is rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop (USPN 4,529,641) in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), and Official Notice. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, and Official Notice teach the subject matter of Claims 1. Holtrop teaches injecting foam into the interior compartment (5:15-21). The Examiner takes the position that it would have been obvious to one of ordinary skill in the art at the time of the invention that foam may also be used as insulation. Holtrop is silent to a layer of reinforcing scrim. Juriga teaches (2:55-60) an improved fiber reinforcing scrim which structurally reinforces the laminate and reduces sag at elevated temperatures located in the second sheet (5:6-7). Juriga teaches that the scrim layer is molded to the second sheet (6:29-35). It would have been obvious to one of ordinary skill in the art at the time of the invention to mold a layer of scrim material to the second sheet forming a scrim reinforced headliner part because doing so would structurally reinforce the laminate and reduce sag at elevated temperatures.

23. **Claim 29** is rejected under 35 U.S.C. 103(a) as being unpatentable over Holtrop in view of Byma (USPN 6,322,658 B1), Steward (USPN 4,211,590), Breezer (USPN 5,635,129), Haardt (USPN 5,180,628), Corpe (USPN 5,795,015), Juriga (USPN 5,549,776), Official Notice, and further in view of Strapazzini (USPN 5,529,742). Holtrop in view of Byma, Steward, Breezer,

Art Unit: 1732

Haardt, Corpe, and Official Notice teach the subject matter of Claim 1. Holtrop in view of Byma, Steward, Breezer, Haardt, Corpe, Juriga, and Official Notice teach the subject matter of Claim 8. Juriga teaches, prior to compressing the half molds of the thermoforming mold fusing the covered first and second headliner parts, (6:15-19) positioning acoustic enhancing materials into what will become the interior compartment. Strapazzini teaches a vacuum forming (4:28) method for forming plastic molded panels with inserts wherein objects such as wires and duct work (2:14) are molded within the thin plastic sheet blanks. Strapazzini also teaches integral portions configured to receive or mount exterior mechanical parts or trim elements (2:15-18). The Examiner interprets these to be fasteners. The references are properly combinable because all are directed to thermoforming laminates, and are therefore within the same field of endeavor. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the elements taught by Strapazzini in the method of Holtrop, Byma, Steward, Breezer, Haardt, Corpe, and Official Notice in order to provide acoustic improvements and to hide items such as wiring and fasteners from view and thereby provide a more pleasing appearance to the headliner.

### *Conclusion*

24. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The Applicant is specifically directed to Brahm (US Patent Application Publication 2003/0164218 and corresponding USPN 6,797,089 B2) and van Damme (Improved Materials Promise New Opportunities for GMT, Reinforced Plastics, July/August 1999). Brahm teaches a layered configuration in Figure 5 that renders obvious the subject matter of Claims 14 and 17.

Art Unit: 1732

The referenced article by van Damme teaches many aspects of Applicant's current invention including the excellent impact properties (Page 50, Col. 1), use of SuperLite in headliners (Page 50, Col. 1), a layer of adhesive or hot melt that is compatible with a range of fabrics and coverings which will enable fabricators to incorporate a fabric covering in a one step molding operation (Page 50, Col. 2), heating the material in an infrared or circulating air oven prior to moulding (Page 50, Col. 2), and high part stiffness obtained by moulding sandwich structures with Azdel SuperLite layers around a foam core (Page 50, Col. 3). The Applicant is also specifically directed to German Patent Publications DE 201 02 194 U1 and DE 101 60 442 A1 which both teach headliners selectively bonded to create air cushions. Other references cited to indicate the state of the art at the time of the invention are as follows: Romesberg (USPN 5582906), Teraoka (USPN 4423000), Patel (USPN 5972444), Breezer (USPN 5885691), Major (USPN 6018927), Carroll, III (USPAP 2002/0017805), Shimizu (USPN 6808576 B2), North (USPN 6702914 B2), Sugimoto (USPN 5576080), Kocsis (USPN 5300360), Bainbridge (USPN 5503903), Juriga (USPN 5565259), Perenon (USPN 5186777), Skaja (USPN 5976451), Hart (USPN 5800846), Souders (USPN 5591289), Addeo (USPN 5342463), Lopez Tonazzi (USPN 6203304 B1), Simmons (USPAP 2004/0081797 A1), Walter (USPN 4052241), Gould (USPN 2976577), and Van Ert (USPN 6146578).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew J. Daniels whose telephone number is (571) 272-2450. The examiner can normally be reached on 8:00 am - 6:00 pm, Monday to Friday.

Art Unit: 1732

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Colaianni can be reached on (571) 272-1196. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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MJD  
11-8-2004



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